

Visual Reflex

Overview: Voluntary nerves are the ones that are under our direct control. Others, called involuntary nerves, are under the control of our brains and create involuntary reactions.

Materials

- ruler
- assistant
- pen

Experiment

1. You will begin by testing your visual reflexes with the help of an assistant.
2. Hold your right elbow at your waist. Position your arm so that it is parallel to the floor. Make a space of about an inch by holding your thumb and forefinger apart. Ask your assistant to hold the ruler vertically, above your thumb and finger.
3. Your job is to focus on the ruler. Your partner will unexpectedly release it so that it begins to fall. You will attempt to catch the ruler as soon as you possibly can.
4. Repeat the experiment 5 times, recording the time it takes to catch the ruler each time for your data. Use the times you record to find your average time.
5. Try this experiment with additional people. Find the average reaction speed of each person and the average speed of the group as a whole.

Visual Reflex Data Table

Trial number	Ruler Mark
1	
2	
3	
4	
5	
AVERAGE: <i>(total marks/total trials)</i>	

Reading

This experiment is an example of a voluntary response. Your eyes see the ruler moving and tell your brain, which then tells your fingers to close quickly. This all happens very fast, but involuntary reflexes can be much faster! You may notice in this activity that the ruler falls over half of the way through your fingers before you can stop it. This is partly because of the communication from eyes to brain to fingers. Although the nerves transmit very quickly, the transmission time can still take a little while.

There are two separate systems at work here: the central nervous system is your brain and spinal column and the longer nerves branching out from the spinal cord to every part of your body is the peripheral nervous system. They work in conjunction to coordinate your actions.

If you lines up all of your nerves, end to end, they would stretch for miles and miles: an average length is about 47 miles of nerves. The longest is the sciatic nerve. It goes from the bottom of your spine to the bottom of your foot.

Exercises

1. What is the voluntary response in this experiment?
2. What is an involuntary response in your body? Give an example.

Answers to Exercises: Visual Reflex

1. What is the voluntary response in this experiment? (The eyes see the ruler moving and tell the brain, which then tells the fingers to close quickly.)
2. What is an involuntary response in your body? (When you tap just below the knee cap and test your tendon reflex, or when you pull your hand away from a hot stove.)